1/20/15

Physics S1

Newtonian Physics

Physics S2

Electromagetic Spectra

1/20/15

On your computer:

- Open the Chrome browser
- Go to: myportal.dpsk12.org
- Change your password to: FIlibday or bdayFIli
- Go to: www.google.com
- Login: studentid#@dpsk12.net
- Click SignIn
- Next page, username: studentid#
- Password: what you just changed it to in MyPortal
- Open Gmail & send e-mail to: mmelosh@dpsk12.net, subject: I'm in

Every day <u>each</u> group will need:

- **One physics textbook**
- **One computer**

Each activity includes:

WDYS

WDYT

Investigate

Physics Talk

Checking up

Physics to Go

1/21/15

Unit one groups as of 1/20/15

Team 1:
Alesha, Katie, Melissa, Adriana, Dezhane

Team 2:
Alma, Tayisha, Valarie, Lexi, Samantha

Changes may occur depending on withdrawals.

1/21/15

Chapter 1: Driving the Roads

Chapter Challenge

5 2-3 min talking ≤ 1 min, ≥ 6 min - 1pt ea.

5pt ea - + 30 explain braking distance, total stopping distance, following distance and the factors that affect each

15 − + the connections between speed, friction, and the radius of the curve when turning

5pt ea. 10 — graphs / charts minimum 2 3pt ea additional up to 4 more

10 — written report

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70 pts

Section 1: Responding to Road Hazards (p. 8)

1/22/15

WDYS Car crash on the mountain, yellow + orange cars crashed, orange flipped, blue car trying to stop, smoke from orange car + blue car's tires because of braking, green grass, bunny, orange car leaking, Billy's hat flew off

WDYT obnoxious child, texting, phone call, eating, panic, looking out side windows, argument w/ passenger, looking for things inside the car, putting on make up, drinking a beverage, emotions, daydreaming, music, smoking, alcohol, mj, recreational drugs, tired

I will use multiple methods to measure and describe reaction time.

Section 1: Responding to Road Hazards (p. 8)

1/22/15

- I will use multiple methods to measure and describe reaction time.

I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

Section 1: Responding to Road Hazards (p. 8) 1/22/15

Investigate:

Method B (10 min)

Reaction Time with Distractions (10 min) 1/23/15

I will use multiple methods to measure and describe reaction time.

Physics Talk (p.12)

1/23/15

Reaction time and distractions

The time it takes to respond to a situation is greater with distractions. Most distractions can be avoided.

Other factors affecting reaction time

alcohol, drugs, age, gender, experience, fatigue, exercise, attentiveness, personality

I will use multiple methods to measure and describe reaction time.

1/23/15

Exit ticket: Physics to Go #4 (p.19)

Answer in a full sentence.

Unit one groups as of 1/26/15

Team 1:
Alesha, Katie, Melissa, Adriana

Team 2:
Dezhane, Valarie, Lexi (CC),
Samantha (WL), Tayisha (ML)

Changes may occur depending on withdrawals.

Section 3: Average Speed: Following Distance and Models of Motion

1/26/15

WDYS bunny has returned, yellow hit red which hit blue car, brown + pink cars are separated, distance post marked "3", yellow is tailgating causing a chain reaction, mountains w/ lake + sailboat, all travelling quickly, all women driving

WDYT A safe following distance depends on speed,
25 mph : 20 m following distance
highway speed : 100 m so you have time to stop
lower speeds : 1 car length
faster speeds : 2 car lengths

I will use multiple methods to measure and describe speed, define and contrast average speed and instantaneous speed, and create and interpret graphs to understand and calculate speed.

Section 3: Average Speed: Following Distance and Models of Motion

1/27/15

What is reaction time and what are some factors that affect it?

Section 3: Average Speed: Following Distance and Models of Motion

1/27/15

- I will use multiple methods to measure and describe speed
- Define and contrast average speed and instantaneous speed
- Create and interpret graphs to understand and calculate speed.

I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

Unit one groups as of 1/28/15

Team 1:
Alesha, Katie, Melissa, Adriana

Team 2:
Dezhane, Valarie, Lexi (CC)

Changes may occur depending on withdrawals.

Section 3: Average Speed: Following Distance and Models of Motion

1/27/15
1/28/15

Investigate:
#1-3, small group (team)
#4-6, whole class
#7-8, small group

I will use multiple methods to measure and describe speed, define and contrast average speed and instantaneous speed, and create and interpret graphs to understand and calculate speed.

Section 3: Average Speed: Following Distance and Models of Motion Physics Talk (pp. 37-46) 1/29/15

Speed - the distance travelled per unit time

distance - how far?, length

Constant speed - speed does not change

Strobe photos - slower speed: shorter distance
faster speed: longer distance

$$\text{average speed} = \frac{\text{total distance travelled}}{\text{time taken to travel}}$$

$$v_{av} = \frac{\Delta d}{\Delta t}$$

distance = meters (m)

time = seconds (s)

I will use multiple methods to measure and describe speed, define and contrast average speed and instantaneous speed, and create and interpret graphs to understand and calculate speed.

Section 3: Average Speed: Following Distance and Models of Motion Physics Talk (pp. 37-46)

1/30/15

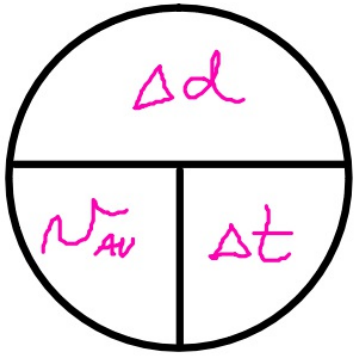
V volts $\bar{v}_{av}$ Velocity

Instantaneous speed - the speed measured during an instant

$\bar{v}_{av} = \frac{\Delta d}{\Delta t}$

$\Delta d = \bar{v}_{av} \cdot \Delta t$

$\Delta t = \frac{\Delta d}{\bar{v}_{av}}$



v $\left(\frac{m}{s}\right)$

Velocity - Speed w/ direction

I will use multiple methods to measure and describe speed, define and contrast average speed and instantaneous speed, and create and interpret graphs to understand and calculate speed.

Section 3: Average Speed: Following Distance and Models of Motion Physics Talk (pp. 37-46)

1/30/15

doppler effect - sounds get (seem) louder as the source gets closer and quieter as the source gets farther away

$$f = \frac{f_o \cdot s}{s - v}$$

$f_o \cdot s/(s-v)$

f (Hz)

reaction distance - (m) how far you travel from when something happens until you react to it

I will use multiple methods to measure and describe speed, define and contrast average speed and instantaneous speed, and create and interpret graphs to understand and calculate speed.

Section 3: Average Speed: Following Distance and Models of Motion

1/30/15

CU Checking Up: #1-4 (p.46)

PtG Physics to Go: #4-7, 12 (pp.49-50)

Unit one groups as of 02/02/15

Team 1:
Alesha, Katie, Melissa,
Adriana, Dezhane, Valarie

Changes may occur depending on withdrawals.

wheelie

WDYS I see a guy doing a willie in his Red CAR when the light turned green. He drove off so fast that his blue hat flew off & he almost ran over a man & his dog. The woman in the yellow car seemed to be driving normally with her cat in the back seat. The woman standing in front of the garage witnessed the events.. -- _ /

WDYT

Similarities: both have wheels, engines
both get to 30 mph
both start at 0 mph

Differences: the heavier bus takes longer to accelerate

Section 4: Graphing Motion: Distance, Velocity, and Acceleration

2/02/15

IWBAT

- Define acceleration using words and an equation;
- Calculate speed, distance, and time using this equation
- Interpret distance-time and velocity-time graphs for different types of motion.

I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

Section 4: Graphing Motion: Distance, Velocity, and Acceleration

2/02-04/15

Investigate: (p. 52)

IWBAT define acceleration using words and an equation; calculate speed, distance, and time using this equation; and interpret distance-time and velocity-time graphs for different types of motion.

Section 4: Graphing Motion: Distance, Velocity, and Acceleration Physics Talk (p.58)

2/05/15

The change in ~~speed~~ velocity is called acceleration.

Velocity with respect to time

speed + direction

Acceleration is caused by a change in speed, direction, or both.

Vector - any quantity that has magnitude and direction (velocity)

Scalar - has only magnitude (speed)

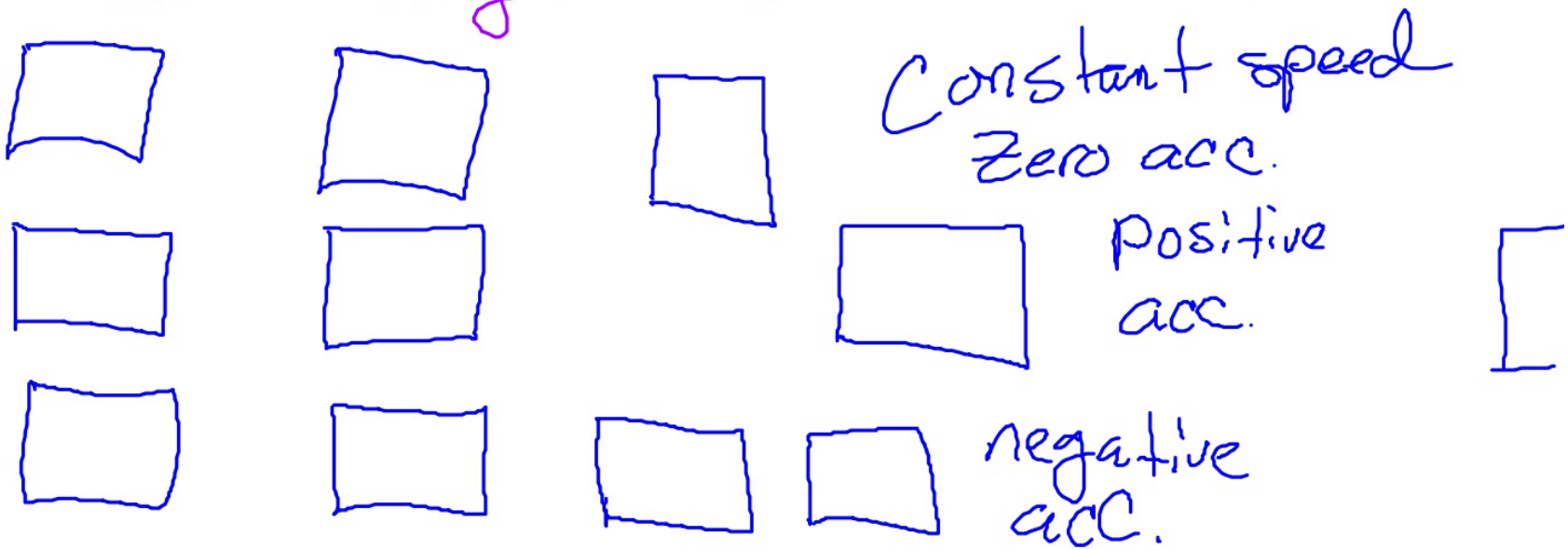
IWBAT define acceleration using words and an equation; calculate speed, distance, and time using this equation; and interpret distance-time and velocity-time graphs for different types of motion.

Section 4: Graphing Motion: Distance, Velocity, and Acceleration Physics Talk (p.58)

2/05/15

Negative acceleration – speed decreases, accelerating in the opposite direction

positive acceleration - speed increases, accelerating in the direction of motion



IWBAT define acceleration using words and an equation; calculate speed, distance, and time using this equation; and interpret distance-time and velocity-time graphs for different types of motion.

Section 4: Graphing Motion: Distance, Velocity, and Acceleration

2/06/15

"Acceleration is the change of ~~speed~~ velocity."

1. What is correct about this?
2. What can be improved?

change in speed or direction.

Section 4: Graphing Motion: Distance, Velocity, and Acceleration

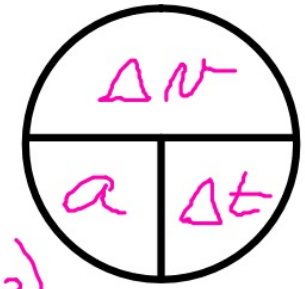
2/06/15

Physics Talk (p.58)

equation

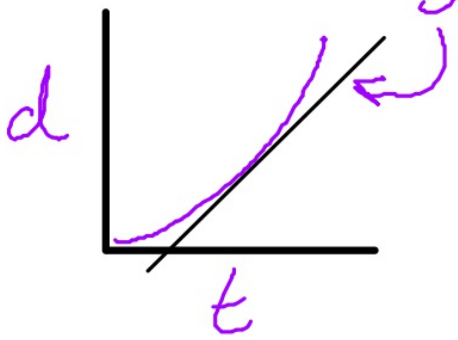
$a = \frac{\Delta v}{\Delta t}$ (m/s) (s)

acceleration $(m/s/s)(m/s^2)$

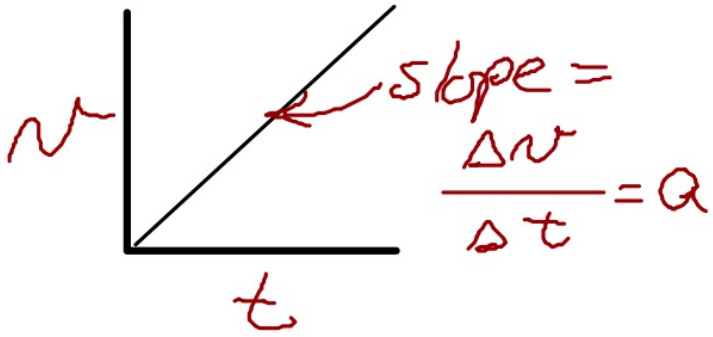


graphs

tangent line
Slope = instantaneous speed



$\frac{\Delta d}{\Delta t} = v$



$\frac{\Delta v}{\Delta t} = a$

Section 4: Graphing Motion: Distance, Velocity, and Acceleration

2/06/15

Checking up (p.64) #1-3
Physics to Go (p.68) #7, 9, 17

$$a = \frac{v_f - v_i}{\Delta t}$$

$$v_{av} = \frac{\Delta d}{\Delta t}$$

After conversing with one partner, answer the What Do You Think Now on pg. 66 and record your answer on your index card.

IWBAT define acceleration using words and an equation; calculate speed, distance, and time using this equation; and interpret distance-time and velocity-time graphs for different types of motion.

Units

2/09/15

Mini-challenge (p. 72)
(40 min.)

Look over the requirements for the chapter challenge. As a team, write a paragraph for your challenge relating to the topics covered in sections one, three, and four.

With the remaining time of the 40 minutes, make sure you have updated your individual physics vocabulary resource for the first seven words listed for chapter 1 and any additional new words of which you wish to keep track.

Braking Your Automobile

WDYS Trees/woods, guy stomping on his brakes, moose is crossing the road, guy looks scared he cannot stop, speed lines & flying papers behind car, smoke coming from tire, back tires coming off the ground - tried to stop instantly, sad moose - likely to get hit

WDYT speed, reaction time, how far away from the animal you were when you saw it, working brakes,

I will

- Plan and carry out an experiment to relate braking distance to initial speed, determine braking distance
- Examine acceleration by seeing how varying the initial speed changes the braking distance.

I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

Section 5: Negative Acceleration:
Braking Your Automobile

2/10/15
2/11/15

Investigate p.75

your plan must include :

- Materials needed

- individual jobs (how will things be accomplished ?)

I will plan and carry out an experiment to relate braking distance to initial speed, determine braking distance, and examine acceleration by seeing how varying the initial speed changes the braking distance.

Section 5: Negative Acceleration: Braking Your Automobile

2/12/15

Physics Talk (p.78)

$$a = \frac{\Delta v}{\Delta t}$$

$$a = \frac{0 - v_i}{\Delta t} = \frac{-v_i}{\Delta t}$$

$$a = \frac{v_f - v_i}{\Delta t}$$

+a motion → a

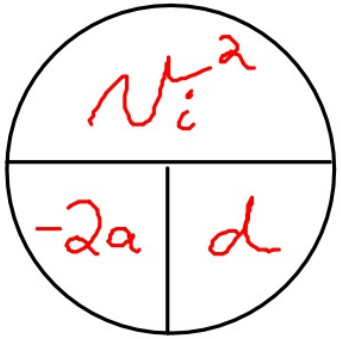
−a motion ← a

I will plan and carry out an experiment to relate braking distance to initial speed, determine braking distance, and examine acceleration by seeing how varying the initial speed changes the braking distance.

Section 5: Negative Acceleration: Braking Your Automobile

2/12/15

Calculating Braking Distance



$$v_f^2 = 2ad + v_i^2$$

d = braking distance

$$0 = 2ad + v_i^2 \quad \text{full stop}$$

$$v_i^2 = -2ad$$

Section 5: Negative Acceleration: Braking Your Automobile

2/12/15

Checking up (p.82) #1-3
Physics to Go (p.88) #2 & 11

I will plan and carry out an experiment to relate braking distance to initial speed, determine braking distance, and examine acceleration by seeing how varying the initial speed changes the braking distance.

WDYS red car driving too fast around a curve and about to fall off a ledge, driving on two wheels, rock falling from up high, red car knocked sign off ledge, red car can't stay in his lane

WDYT Why slow down: car could tip over, harder to turn + stay on the road,
How do they know? Tested, accidents, road width, steepness, type of traffic, road surface, visibility

IWBAT

- Recognize the need for centripetal force when rounding a curve
- Predict the effect of inadequate centripetal force
- Relate speed to centripetal force.

I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

Section 7: Centripetal Force

2/13/15
2/18/15

Investigate (p. 105)

There are four stations.

- Turntable
- Car on string
- Cork accelerometer
- Bocce ball & newspaper

2/18/2015 Complete the investigation on which you were working at the conclusion of Friday's class. You should have results for all four investigations listed above.

IWBAT recognize the need for centripetal force when rounding a curve, predict the effect of inadequate centripetal force, and relate speed to centripetal force.

Section 7: Centripetal Force

2/19/15

Physics Talk (p.109)

Centripetal force always toward the center of the curve. If something is turning, centripetal force is acting on that object.

Sources: friction, gravity, muscles, tension (pulling force)

Centripetal acceleration – is an acceleration caused by a change in direction, speed does not need to change

IWBAT recognize the need for centripetal force when rounding a curve, predict the effect of inadequate centripetal force, and relate speed to centripetal force.

Checking Up (p. 110) #1-3, 6
Physics to Go (pp. 114-115) #3, 4, 7, 9, 12, 13

Exit ticket: How is the amount you are to slow down for a curve determined?

IWBAT recognize the need for centripetal force when rounding a curve, predict the effect of inadequate centripetal force, and relate speed to centripetal force.

Chapter 1: Driving the Roads

2/20/15

Chapter Challenge (pp. 118-121)

Chapter 1: Driving the Roads

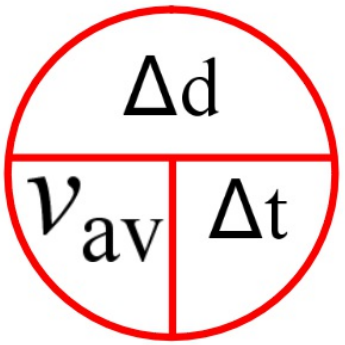
2/24/14

Due Wednesday, 2/25/15

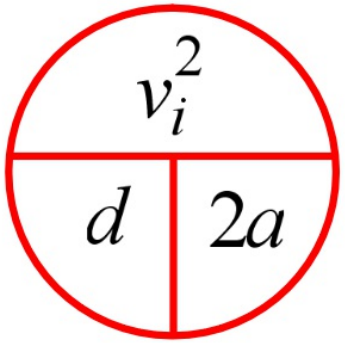
- Chapter Challenge presentation (team)
- Chapter 1 vocabulary (individual)
- Chapter 1 WDYS/WDYT (individual)
- Chapter 1 notebook (team)

$$v_{av} = \frac{(v_1 + v_2)}{2}$$

$$v_{av} = \frac{\Delta d}{\Delta t}$$



$$d = \frac{v_i^2}{2a}$$



$$a = \frac{\Delta v}{\Delta t}$$